

**ABSTRACT OF THE DISCLOSURE**

An OP-N connection is mapped through a communications network between first and second end-nodes via at least one intermediate node. The integrity and validity of the OP-N connection can be determined independently of SONET/SDH lines, sections or paths mapped through the network, and potentially utilizing bandwidth of the OP-N connection. Validation of the OP-N connection can be accomplished by inserting performance monitor (PM) information into a data signal at the first end-node. The PM information is inserted into the synchronous payload envelope (SPE) of a SONET/SDH data signal. At each intermediate node between the first and second end-nodes, the PM information may be extracted, examined and/or augmented or simply pointer processed before the data signal is forwarded. At the second end-point, the PM information is extracted and examined. Multiple levels of OP-N connections are supported, with each level being provided with a respective set of PM information carried in the SPE.

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